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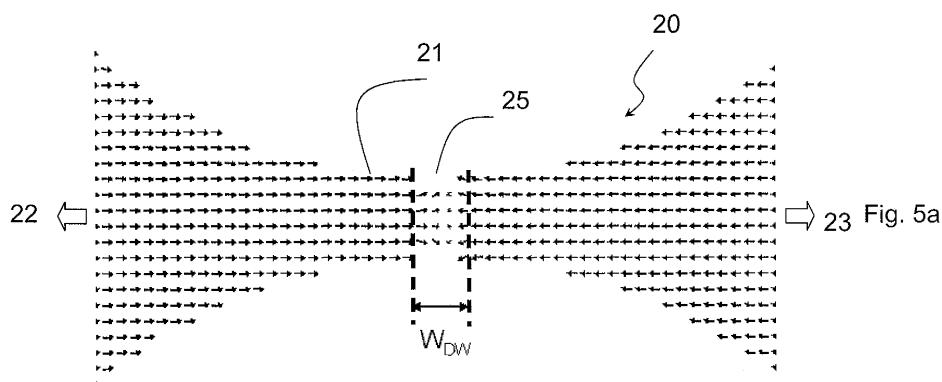
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(54) **Thin-film device for detection of physical quantities, in particular a magnetic field, and corresponding method of detection**

(57) Described herein is a thin-film device for detecting physical quantities, in particular a magnetic field, of the type comprising an electrical circuit including one or more sensitive elements (10; 20; 30), which are designed to vary their own electrical resistance (R) as a function of a physical quantity to be detected, said one or more sensitive elements (10; 20; 30) comprising at least one nanoconstriction (10; 20; 30), said nanoconstriction (10; 20; 30) comprising at least two pads (12, 13; 22, 23) made of magnetic material, associated to which are respective magnetizations (16, 17; M₁, M₂) oriented in di-

rections substantially opposite to one another and connected through a nanochannel (11; 21; 21'; 21''), said nanochannel (11; 21; 21'; 21'') being able to set up a domain wall (15; 25) that determines the electrical resistance (R) of said nanoconstriction (10; 20; 30) as a function of the position, with respect to said nanochannel (11; 21; 21'; 21''), of said domain wall (15; 25) formed in said sensor device. At least one cross section of said nanochannel (21; 21'; 21'') is configured so as to present a variable extension (L_{DW}) along one or more axes (x) as a function of different values of said physical quantity to be detected.





EUROPEAN SEARCH REPORT

Application Number
EP 06 11 6937

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The present search report has been drawn up for all claims			
1	Place of search The Hague	Date of completion of the search 31 July 2009	Examiner Wilhelm, Jörg
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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